What is claimed is:

1. An interferometer system, comprising:

a radiation source for emitting radiation of an adjustable frequency;

a reference surface;

a support for an object providing an object surface;

a position-sensitive radiation detector;

a disturbing interference surface;

a controller; and

an integrator;

wherein the radiation source, the reference surface, the support and the radiation detector are positioned such that a first portion of the radiation emitted by the radiation source is incident on the reference surface and reflected as a reference wave field therefrom, a second portion of the radiation emitted by the radiation source is directed towards the object surface to generate an object wave field reflected from the object surface, and the reference wave field and the object wave field are superposed to form an interference pattern having a position-dependent intensity distribution on the radiation detector;

wherein the disturbing interference surface is positioned such that radiation emitted from the radiation source is incident thereon and that a disturbing wave field reflected from the disturbing

interference surface contributes to the position-dependent intensity distribution on the radiation detector;

wherein the controller is configured for setting the adjustable frequency of the radiation emitted by the radiation source to a plurality of different frequencies; and

wherein the integrator is configured for position-dependent averaging the interference patterns formed on the radiation detector at different frequencies.

2. The interferometer system according to claim 1, wherein the radiation detector comprises a CCD camera.

3. The interferometer system according to claim 1, wherein the integrator is formed by the radiation detector.

4. The interferometer system according to claim 3, wherein the controller is configured to set the adjustable frequencies to at least two different frequencies during a period of time which corresponds to an integration time of the detector.

5. The interferometer system according to claim 3, wherein the controller is configured to set the adjustable frequencies to all of the plurality of different frequencies during a period of time which corresponds to an integration time of the detector.

6. A method of recording an interferogram, comprising:

illuminating a reference surface and an object surface with coherent radiation having a frequency;

superposing a reference wave field reflected from the reference surface and an object wave field reflected from the object surface such that an interference pattern with a position-dependent radiation intensity distribution is formed on a screen; and

changing the frequency of the radiation successively to a plurality of different radiation frequencies, such that a plurality of interference patterns is successively formed on the screen in accordance with the respective different radiation frequencies;

wherein the interferogram is generated by a weighted averaging of intensities of the plurality of interference patterns at respective positions of the interferogram.

7. A method of manufacturing an object having an object surface of a target shape, the method comprising:

illuminating a reference surface and the object surface with coherent radiation having a frequency;

superposing a reference wave field reflected from the reference surface and an object wave field reflected from the object surface such that an interference pattern with a position-dependent radiation intensity distribution is formed on a screen;

changing the frequency of the radiation successively to a plurality of different radiation frequencies, such that a plurality of interference patterns is successively formed on the screen in accordance with the respective different radiation frequencies;

generating an interferogram by a weighted averaging of intensities of the plurality of interference patterns at respective positions of the interferogram; and

machining the object surface in dependence of the generated interferogram.

8. The method according to claim 7, wherein weighting factors for the weighted averaging are set by adjusting durations of illumination with the respective different radiation frequencies.

9. The method according to claim 7, wherein a disturbing interference surface is disposed at a distance from at least one of the object surface and the reference surface, wherein the disturbing interference surface is illuminated with the coherent radiation, and wherein values of at least one of the different radiation frequencies and of weighting factors for the weighted averaging are determined in dependence of the distance.

10. The method according to claims 7, wherein a first optical path difference exists between an optical path from the reference surface to the detector and an optical path from the object surface to the detector;

wherein a second optical path difference exists between an optical path from the reference surface to the detector and an optical path from the disturbing interference surface to the detector;

wherein a difference exists between the first optical path difference and the second optical path difference;

wherein the illumination is performed with a lower frequency, a medium frequency, and a higher frequency of the coherent radiation, wherein a frequency difference between the higher frequency and the medium frequency is equal to a frequency difference between the medium frequency and the lower frequency such that the equation

$$\Delta k \cdot C_1 = \pi$$

is fulfilled, wherein

Δk is a wave number change corresponding to the frequency distance, and

C_1 is the difference between the first optical path difference and the second optical path difference;

wherein the distance between the disturbing frequency surface and the detector is adjusted such that the equation

$$\Delta k \cdot C_2 = 3\pi$$

is fulfilled, wherein

C_2 is the second optical path difference; and

wherein the weighted averaging is performed such that a same weighting factor is associated with the interference patterns corresponding to the lower and higher frequencies and that a weighting factor associated with the interference pattern corresponding to the medium frequency is twice the weighting factor associated with the interference pattern corresponding to the lower frequency.

11. The method according to claim 7, further comprising determining differences between the object surface and the target surface in dependence of the generated interferogram, wherein the machining is performed in dependence of the determined differences.

12. The method of claim 11, wherein the machining comprises removing surface portions from the object at positions which are determined as a function of the differences between the object surface and the target surface.